

SEQUENCE LISTING

<110> Levy , Ilan

Shoseyov, Oded

Nussinovitch, Amos

<120> MODIFICATION OF POLYSACCHARIDE CONTAINING MATERIALS

<130> 00/20910

<140> 60/166,389 and 60/164,140

<141> 1999-11-18 and 1999-11-08

<160> 13

<170> PatentIn version 3.0

<210> 1

<211> 507

<212> DNA

<213> Clostridium cellulovorans

<400> 1

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gtgaccatgc tgggtgcatta ttaggaaata gctatgttga taacactagc aaagtgcag      240
caaacttcgt taaagaaaca gcaagcccaa catcaaccta tgatacatat gttgaatttg      300
gatttgcaag cggacgagct actcttaaaa aaggacaatt tataactatt caaggaagaa      360
taacaaaatc agactggtca aactacactc aaacaaatga ctattcattt gatgcaagta      420
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<210> 2

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<213> Clostridium cellulovorans

<400> 2

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35 40 45

Thr Ser Asp Gly Thr Gln Gly Gln Thr Phe Trp Cys Asp His Ala Gly

50 55 60

2

Ala Leu Leu Gly Asn Ser Tyr Val Asp Asn Thr Ser Lys Val Thr Ala
 65 70 75 80
 Asn Phe Val Lys Glu Thr Ala Ser Pro Thr Ser Thr Tyr Asp Thr Tyr
 85 90 95
 Val Glu Phe Gly Phe Ala Ser Gly Arg Ala Thr Leu Lys Lys Gly Gln
 100 105 110
 Phe Ile Thr Ile Gln Gly Arg Ile Thr Lys Ser Asp Trp Ser Asn Tyr
 115 120 125
 Thr Gln Thr Asn Asp Tyr Ser Phe Asp Ala Ser Ser Ser Thr Pro Val
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 Val Asn Pro Lys Val Thr Gly Tyr Ile Gly Gly Ala Lys Val Leu Gly
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<213> Clostridium cellulovorans

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 attattacac aagtgatggt acacaaggac aaactttctg gtgtgacat gctggtgcat 180
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 atccaaaagt tacaggatat ataggtggag cttaaagtact tggtagacga ccaggtccag 480
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<212> PRT

<213> Clostridium cellulovorans

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 Leu Asn Asp Val Lys Val Arg Tyr Tyr Tyr Thr Ser Asp Gly Thr Gln
 35 40 45
 Gly Gln Thr Phe Trp Cys Asp His Ala Gly Ala Leu Leu Gly Asn Ser
 50 55 60
 Tyr Val Asp Asn Thr Ser Lys Val Thr Ala Asn Phe Val Lys Glu Thr
 65 70 75 80
 Ala Ser Pro Thr Ser Thr Tyr Asp Thr Tyr Val Glu Phe Gly Phe Ala
 85 90 95
 Ser Gly Arg Ala Thr Leu Lys Lys Gly Gln Phe Ile Thr Ile Gln Gly
 100 105 110
 Arg Ile Thr Lys Ser Asp Trp Ser Asn Tyr Thr Gln Thr Asn Asp Tyr
 115 120 125
 Ser Phe Asp Ala Ser Ser Ser Thr Pro Val Val Asn Pro Lys Val Thr
 130 135 140
 Gly Tyr Ile Gly Gly Ala Lys Val Leu Gly Thr Ala Pro Gly Pro Asp
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<213> Clostridium cellulovorans

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 tattaggaaa tagctatggt gataaacta gcaaagtgac agcaaacttc gttaaagaaa 240
 cagcaagccc aacatcaacc tatgatacat atgttgaatt tggatttga agcggacgag 300
 ctactcttaa aaaaggacaa ttataacta ttcaaggaag aataacaaaa tcagactggt 360
 caaactacac tcaaacaat gactattcat ttgatgcaag tagttcaaca ccagttgtaa 420
 atccaaaagt tacaggatat atagggtggag ctaaagtact tggtagacga ccaggtccag 480
 atgtaccatc ttcaataatt aatcctactt ctgcaacatt tgatcccgt accatggcag 540
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ctggtgcatt attaggaaat agctatgttg ataacactag caaagtgaca gcaaacttcg 780
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cagactgggc aaactacact caaacaaatg actattcatt tgatgcaagt agttcaacac 960
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<210> 6

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<213> Clostridium cellulovorans

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Leu Asn Asp Val Lys Val Arg Tyr Tyr Tyr Thr Ser Asp Gly Thr Gln
35           40           45
Gly Gln Thr Phe Trp Cys Asp His Ala Gly Ala Leu Leu Gly Asn Ser
50           55           60
Tyr Val Asp Asn Thr Ser Lys Val Thr Ala Asn Phe Val Lys Glu Thr
65           70           75           80
Ala Ser Pro Thr Ser Thr Tyr Asp Thr Tyr Val Glu Phe Gly Phe Ala
85           90           95
Ser Gly Arg Ala Thr Leu Lys Lys Gly Gln Phe Ile Thr Ile Gln Gly
100          105          110
Arg Ile Thr Lys Ser Asp Trp Ser Asn Tyr Thr Gln Thr Asn Asp Tyr
115          120          125
Ser Phe Asp Ala Ser Ser Ser Thr Pro Val Val Asn Pro Lys Val Thr
130          135          140
Gly Tyr Ile Gly Gly Ala Lys Val Leu Gly Thr Ala Pro Gly Pro Asp
145          150          155          160
Val Pro Ser Ser Ile Ile Asn Pro Thr Ser Ala Thr Phe Asp Pro Gly
165          170          175
Thr Met Ala Ala Thr Ser Ser Met Ser Val Glu Phe Tyr Asn Ser Asn
180          185          190

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Lys Ser Ala Gln Thr Asn Ser Ile Thr Pro Ile Ile Lys Ile Thr Asn
 195 200 205
 Thr Ser Asp Ser Asp Leu Asn Leu Asn Asp Val Lys Val Arg Tyr Tyr
 210 215 220
 Tyr Thr Ser Asp Gly Thr Gln Gly Gln Thr Phe Trp Cys Asp His Ala
 225 230 235 240
 Gly Ala Leu Leu Gly Asn Ser Tyr Val Asp Asn Thr Ser Lys Val Thr
 245 250 255
 Ala Asn Phe Val Lys Glu Thr Ala Ser Pro Thr Ser Thr Tyr Asp Thr
 260 265 270
 Tyr Val Glu Phe Gly Phe Ala Ser Gly Arg Ala Thr Leu Lys Lys Gly
 275 280 285
 Gln Phe Ile Thr Ile Gln Gly Arg Ile Thr Lys Ser Asp Trp Ser Asn
 290 295 300
 Tyr Thr Gln Thr Asn Asp Tyr Ser Phe Asp Ala Ser Ser Ser Thr Pro
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 Gly Thr Ala Pro
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<210> 7
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 <213> recombinant nucleotide sequence
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 <222> (3)..(791)
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 <222> (795)..(1280)
 <223> from cbpA gene
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 actctcaagc tccaaaagct gatgcgcaac aaaataactt caacaaagat caacaaagcg 180
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aaagtcttaa agacgaccca agccaaagca ctaacgtttt aggtgaagct aaaaaattaa 300
acgaatctca agcaccgaaa gctgataaca atttcaacaa agaacaacaa aatgctttct 360
atgaaatctt gaatatgcct aacttaaacg aagaacaacg caatggtttc atccaaagct 420
taaaagatga cccaagccaa agtgctaacc tattgtcaga agctaaaaag ttaaataaat 480
ctcaagcacc gaaagcggat aacaaattca acaaagaaca acaaaatgct ttctatgaaa 540
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caccaaaagc tgacaacaaa ttcaacaaag aacaacaaaa tgctttctat gaaattttac 720
atttacctaa cttaactgaa gaacaacgta acggcttcat ccaaagcctt aaagacgac 780
cggggaattc catggcagcg acatcatcaa tgtcagttga attttacaac tctaacaat 840
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<210> 8

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<223> protein A from cloning vector

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<222> (265)..(426)

<223> CBPA

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Gly Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala

35 40 45

Gln Gln Asn Asn Phe Asn Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile
 50 55 60
 Leu Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln
 65 70 75 80
 Ser Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala
 85 90 95
 Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn
 100 105 110
 Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu
 115 120 125
 Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro
 130 135 140
 Ser Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser
 145 150 155 160
 Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala
 165 170 175
 Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn
 180 185 190
 Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu
 195 200 205
 Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp
 210 215 220
 Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His
 225 230 235 240
 Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu
 245 250 255
 Lys Asp Asp Pro Gly Asn Ser Met Ala Ala Thr Ser Ser Met Ser Val
 260 265 270
 Glu Phe Tyr Asn Ser Asn Lys Ser Ala Gln Thr Asn Ser Ile Thr Pro
 275 280 285
 Ile Ile Lys Ile Thr Asn Thr Ser Asp Ser Asp Leu Asn Leu Asn Asp
 290 295 300
 Val Lys Val Arg Tyr Tyr Tyr Thr Ser Asp Gly Thr Gln Gly Gln Thr
 305 310 315 320
 Phe Trp Cys Asp His Ala Gly Ala Leu Leu Gly Asn Ser Tyr Val Asp
 325 330 335
 Asn Thr Ser Lys Val Thr Ala Asn Phe Val Lys Glu Thr Ala Ser Pro
 340 345 350

Thr Ser Thr Tyr Asp Thr Tyr Val Glu Phe Gly Phe Ala Ser Gly Arg
 355 360 365
 Ala Thr Leu Lys Lys Gly Gln Phe Ile Thr Ile Gln Gly Arg Ile Thr
 370 375 380
 Lys Ser Asp Trp Ser Asn Tyr Thr Gln Thr Asn Asp Tyr Ser Phe Asp
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 420 425

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 <223> taken from bovine
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 cgatgcaagc cagtgaacac ctttgtgcac gagtccctgg ctgatgtcca ggccgtgtgc 780
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<213> Synthetic Oligonucleotide;

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